Ameren Illinois Response to 83 IL Admin Code Part 475.100

Information to be Submitted in Advance of Stakeholder Process
for Multi-Year Integrated Grid Plan and Workshops

December 13, 2021

BACKGROUND

On September 15, 2021, Governor Pritzker signed the Climate and Equitable Jobs Act (CEJA) into law. CEJA amended the Public Utilities Act, 220 ILCS 5/1-101 et seq., to add new Section 16-105.17, which mandates the development of a multi-year integrated grid plan. Section 16-105.17 is designed to, among other things, ensure "alignment of regulated utility operations, expenditures, and investments with public benefit goals, including safety, reliability, resiliency, affordability, equity, emissions reductions and expansion of clean distributed energy resources"[1]. Section 16-105.17 further outlines the requirements and attributes of the multi-year integrated grid plan and plan development processes, which includes a stakeholder process designed to, among other things:

A. Review utilities planned investments and supporting data;
B. Review how utilities plan to invest in their distribution system in order to meet the system's projected needs;
C. Review system and locational data on reliability, resiliency, DER, and service quality provided by the utilities;
D. Solicit and consider input from diverse stakeholders;
E. Consider proposals on programs and policies necessary to achieve certain planning objectives;
F. Consider proposals applicable to the elective Multi-Year Integrated Grid Plan;
G. Provide information to interested stakeholders to facilitate effective and efficient feedback; and
H. Review planned capital investment to ensure delivery services are provided at rates that are affordable to all customers, including low-income customers.

The pages that follow incorporate Ameren Illinois' response to subparts (a) – (g) of Part 475.100 as information to be provided prior to the Stakeholder Workshops.

1 220 ILCS 5/16-105.17(a)

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(a) a preliminary proposal outlining the capital investments the utility may undertake in the 5-year period following the year in which the Stakeholder Process is conducted, together with supporting data;

The projections in the table are draft and should be considered preliminary in total and by category. Any information provided has not been approved by the Ameren Board of Directors. Budgets are approved annually.

Illinois Regulated Operations–Electric System Planned Investments ($M)	2022	2023	2024	2025	2026 Public - redacted	2027
Regulatory Compliance						
Regulatory Compliance	$2	$2	$2	$2		TBD
New Business	$36	$37	$38	$39		TBD
Customer Requested	$11	$12	$12	$13		TBD
Government Relocations	$8	$7	$8	$8		TBD
Customer Energy Efficiency	$59	$49	$45	$23		TBD
Regulatory Compliance Total	**$117**	**$107**	**$106**	**$86**		**TBD**
System Performance/Reliability						
Reliability	$63	$62	$95	$85		TBD
Smart Grid	$0	$5	$33	$38		TBD
System Performance/Reliability Total	**$63**	**$67**	**$128**	**$123**		**TBD**
End of Life/Aging Infrastructure						
System Repair & Maintenance	$138	$162	$155	$248		TBD
End of Life/Aging Infrastructure Total	**$138**	**$161**	**$155**	**$248**		**TBD**
System Capacity						
System Growth	$28	$23	$29	$22		TBD
System Capacity Total	**$28**	**$23**	**$29**	**$22**		**TBD**
Operate the Business						
Corporate/Segment Support	$30	$32	$32	$32		TBD
Improve Customer Systems	$4	$3	$5	$7		TBD
Operate the Business Total	$33	$35	$36	$40		TBD
Storm/Failure/Spare						
Emergency Response	$32	$32	$33	$34		TBD
Storm Restoration	$20	$20	$21	$21		TBD
Storm/Failure/Spare Total	**$51**	**$52**	**$54**	**$55**		**TBD**
Grand Total	**$430**	**$444**	**$508**	**$573**		**TBD**

INVESTMENT TYPE	DEFINITION
Regulatory Compliance	Work required by (or committed to) established regulatory programs.
New Business	Installation of new facilities or upgrade of existing facilities directly serving a customer or a group of customers.
Customer Requested	Work requested by a customer but does not represent a new service.
Government Relocations	Physical movement of transmission and distribution assets based on a request of a governmental body.
Customer Energy Efficiency	Work associated with residential and non-residential energy efficiency and demand response programs.
Reliability	Work for which the primary goal is to prevent or reduce customer interruptions; frequency or duration.
Smart Grid	Incorporation of computer intelligence and communication systems onto the system of poles, wires, transformers, switches and meters. The purpose is to use new technology to operate the electric grid for increased safety and reliability, improved operating and energy efficiencies, improved customer energy information, and reduced impact on the environment.
System Repair & Maintenance	Non-emergency repairs to failed or failing equipment and preventative equipment replacement and maintenance. Can include replacement of substation breakers, regulators, transformers, reconductoring of distribution or subtransmission circuits, replacement of underground cable or other aging equipment.
System Growth	Addittion of new facilities, or upgrade of existing facilities not directly attributable to a single customer or a group of new customers. Can include reconductoring of existing circuits, build of new substations, replacement of substation transformers, regulators.
Corporate/Segment Support	Costs of supporting the operating activities.
Improve Customer Systems	Work associated with addressing customer related systems.
Emergency Response	Reactive work caused by equipment failure, or other non-storm damage to equipment in which work area needs to be made safe or completed for public and coworker safety.
Storm Restoration	Restoration work required as a result of storm activity.

(b) a summary of how the utility plans to invest in its Electric Distribution System in order to meet the system's projected needs during the 5-year period following the year in which the Stakeholder Process in [sic] conducted;

Ameren Illinois utilizes a planning process and a number of programs to meet the system needs and enhance reliability and resiliency to our customers.

A planning assessment of the Ameren Illinois distribution system is performed annually. The primary planning process is referred to as Load Analysis, which is used to develop load forecasts and identify substation level improvement opportunities. The Load Analysis process typically starts early-October and lasts through November. Input data to Load Analysis includes peak dates, actual daily mean temperature of the observed system peak day, peak load data, new diversions or adjustments, distributed energy resources (DER) output, baseline load growth rate adjustments, and equipment ratings. These peak load values are determined using the best available data for each asset, including time-series measurement data [supervisory control and data acquisition (SCADA) and/or advanced metering infrastructure (AMI)], drag-hand style equipment readings, local equipment readings, and manual readings where necessary. Data is reviewed to determine reasonableness by comparing it against projected and historical data. Switching events or other abnormalities are evaluated to determine the normal configuration load peak. Peak loads are estimated with historical or model data if actual data is not available.

During the annual planning process, Ameren Illinois tracks summer season-peak loads within the service territory to ensure that our grid is prepared to withstand the extremes of loadings. Winter peak loads are tracked and forecasted for areas that experience annual peak loads higher than summer, during the winter season. The actual peak load for a given device (distribution circuit, substation, transformer, etc.) is determined by recording the maximum loading on that device in the applicable planning year. Weather normalized peak loads are also calculated to look for potential overloads at various points on the grid (at a circuit, transformer, or substation). Weather normalized peak loads are calculated by using the actual peak loads that are measured and applying a temperature correction factor, if needed. The temperature correction factor is used to adjust for instances where the actual daily mean temperature is different than the system design daily mean temperature. When overloads of equipment are forecasted, projects are initiated, designed and constructed to prevent equipment overloads before the projected peak season (summer or winter). Additional projects are engineered and completed as well, such as circuit phase balancing and load shifting/diversions to enhance the overall reliability and resiliency of the distribution grid.

The sub-transmission (high-voltage distribution) planning process also begins with Load Analysis. After Load Analysis, load forecasts that consider projected distribution substation loads, large customers taking delivery above 15kV, and wholesale customers, are developed and finalized. Subtransmission model updates begin with the latest available transmission Multi-Area Model Working Group case.

Subtransmission models are made for the 5-year planning window, including system projects, new or existing customer load additions, and projected loads from recently completed Load Forecasts. Updated models for the 5-year planning window are typically completed in one month. System Assessments for the 5-year planning window and other system studies are then done over a five-month window. Review of assessment results and submission of projects then occurs prior to the following year Load Analysis.

Ameren Illinois also monitors the performance of the physical assets on the system through periodic inspections, maintenance programs and operating practices. In an effort to reduce unexpected failures of assets, strategies of capital investments are developed and executed to focus on the replacement of aging infrastructure. Using inspection results, health monitoring, engineering knowledge and operational expertise, assets with higher risk of failure are identified and proactively replaced to ensure maximum operating reliability.

Aside from projects driven by the load analysis planning process and aging infrastructure, Ameren Illinois continues to focus on reliability-based investments, new business, DER interconnections, and maintenance with a goal to continue operating a safe, flexible, and reliable electric grid. Ameren Illinois will continue to evaluate market/industry capabilities for improved planning tools such as non-wires alternatives (NWA) and distributed energy resources management systems (DERMs.)

Copperleaf C55 is a computer program used to support project and alternatives valuation based on multiple measures including electric system safety, security, affordability, environmental impacts, and reliability. Aided by the C55 valuation, investment decisions involve collaboration of Ameren Illinois personnel including but not limited to, engineering, operations, construction services, project costs, and executive leadership. C55 information is dynamic as it is updated on an ongoing basis as project information changes.

Also of note, the Public Utilities Act directs that "Every public utility subject to this Act shall provide service and facilities which are in all respects adequate, efficient, reliable and environmentally safe and which, consistent with these obligations, constitute the least-cost means of meeting the utility's service obligations." (220 ILCS 5/8-401) (from Ch. 111 2/3, par. 8-401)

(c) system and locational data on reliability, resiliency, DER, and service quality;

Ameren Illinois' electric service territory is divided into four Regions. The four Regions are displayed in the following figure:

Reliability/Resiliency

Ameren Illinois has implemented hundreds of projects in the past years, added new technology and strengthened poles, wires and distribution equipment. As a result, the frequency of outages (SAIFI) has improved by an average of 22 percent, and the duration of outages (CAIDI) has been improved by an average of 16 percent. Information on Ameren Illinois' annual Infrastructure Investment Plans is publicly available on the ICC website.

Ameren Illinois has undertaken a number of initiatives that have optimized the reliability and resiliency of its distribution grid, which include Substation & Relay Maintenance, Forestry, Circuit and Pole Inspections, Device inspections, Animal Protection, Multiple Device Inspections, Lightning Protection, Protective Device Coordination Program, Annual Planning Process, Manhole and Vault Inspections, Customers with Repetitive Outages, Underground Cable Fault Tracking, Inoperable Equipment List, Cold Load Restoration, and Energized Zone Risk Reduction. Information associated with these initiatives have been provided in conjunction with the Baseline Grid Assessment.

Consistent with the Ameren Illinois reporting in the annual 411 Reliability report, below is the SAIFI, SAIDI, and CAIDI metrics for all outages.

Year	SAIFI	SAIDI	CAIDI
2020	1.10	224	204
2019	1.20	179	149
2018	1.10	208	189
2017	1.17	191	164
2016	1.42	238	168
2015	1.43	352	246

Ameren Illinois' SAIFI, SAIDI, and CAIDI for outages are also broken down by Region for the same time period. It should be noted that the following metrics exclude substation, transmission/supply and forestry-related outages.

SAIFI						
Region	2015	2016	2017	2018	2019	2020
Eastern	1.16	1.34	1.16	1.00	1.09	0.89
Northern	1.73	1.39	1.26	1.09	1.46	1.39
Southern	1.35	1.67	1.13	1.31	1.08	1.04
Western	1.30	1.29	1.09	1.00	1.01	0.88

SAIDI						
Region	2015	2016	2017	2018	2019	2020
Eastern	117	150	133	127	145	127
Northern	610	186	227	166	244	380
Southern	176	439	162	395	154	171
Western	341	207	219	168	133	122

CAIDI						
Region	2015	2016	2017	2018	2019	2020
Eastern	101	112	114	127	134	143
Northern	353	134	180	152	168	273
Southern	130	263	144	302	142	164
Western	262	161	202	169	132	138

DER

Ameren Illinois has seen steady growth in DER over the last 3-4 years. DER can provide grid benefits, but the extent of the benefits is mostly dependent on time and geographic parameters. Ameren Illinois is planning to publish public facing hosting capacity maps and queue reports in 2022.

The majority of Ameren Illinois' distribution system is designed as a radial system, meaning there is only one source feeding the circuit. Normal operation is power flow from the substation bus out to the customer load. The conductor sizing (as it impacts voltage drop and flicker), the circuit protection schemes (time-overcurrent), voltage regulation schemes (voltage regulators and capacitor banks), and voltage optimization (VO) operations are all predicated on how, when, and where this power flows. Adding a DER at any location on the circuit, aside from the substation bus, means that reverse power may occur in a number of locations besides just the substation feeder or substation transformer. The addition of larger DER also changes the available short circuit current (adding an additional source) as well as impacting the voltage profiles; this changes the distribution system from a radial, to a network system. DER penetration causing reverse power flow can make it more complex to study, operate and continue to maintain reliability, as well as our employees' safety. Ameren Illinois has produced a report showing the distribution circuits that, through our planning process, have a potential for reverse power flow. Please refer to Attachment 1 – Potential Reverse Power Flow.

As an Integrated Distribution Company, Ameren Illinois does not own generation but does have experience operating DER assets as follows:

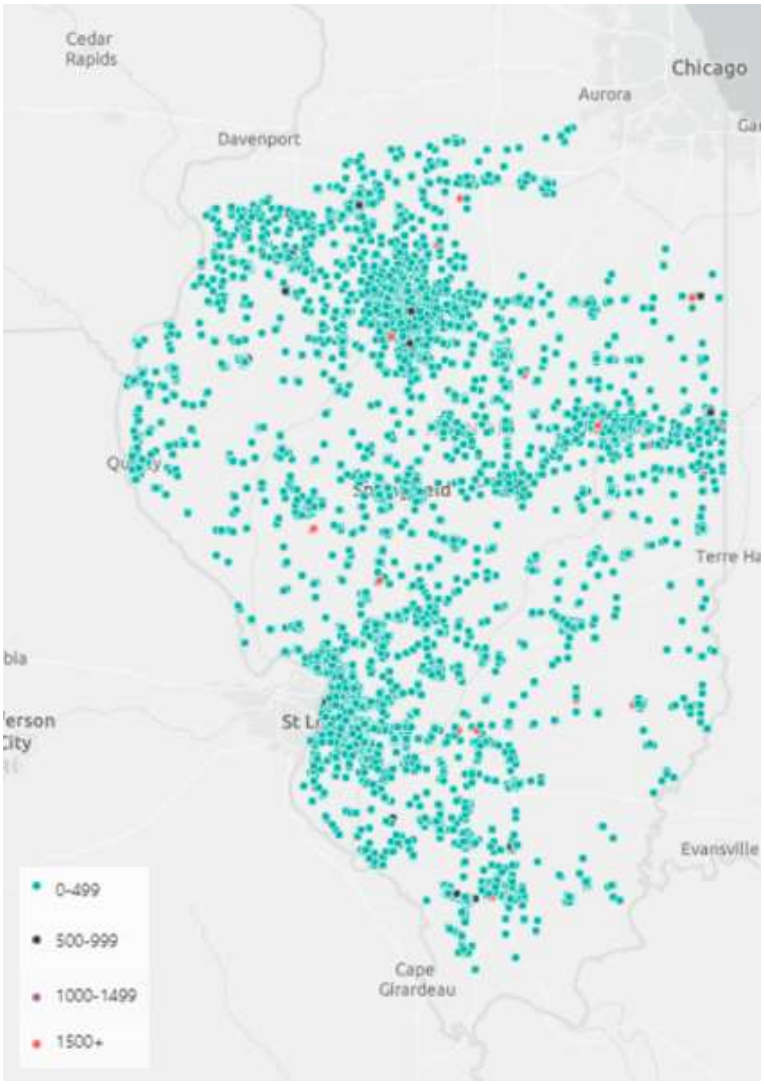
1. Technology Applications Center (TAC): Ameren Illinois has experience with data acquisition and control of the solar, wind, and battery energy storage system DERs at the TAC through the implementation of a microgrid control system as well as from the Ameren Illinois' ADMS system. Manual DER control is possible from both the microgrid control platform and ADMS. In addition, the microgrid control platform provides levels of DER control automation to facilitate microgrid islanding and grid-tie transitions. Ameren Illinois does not own the solar and wind facilities at the TAC, but Ameren Illinois has leases for the assets to operate the microgrid.

2. Thebes: A 1MW Energy Storage System (ESS) that was installed on Gale circuit S34-528. This is a pilot project intended to gain experience utilizing an ESS as a reliability device. This circuit was previously identified as a worst performing circuit (WPC). The ESS is used as an automatic transfer voltage source for the community when an outage occurs as a result of the loss of supply.

As described in section (b)**,** Ameren Illinois takes into account DER penetration for the annual planning processes. While Ameren Illinois does meter larger DER, behind-the-meter (BTM) DER is currently difficult to account for due to load masking and limited visibility beyond the substation. Therefore, Ameren Illinois has made attempts to best account for this data based on DER output data via PV-Watts or other commercially available tools where appropriate.

Please refer to Attachment 2 – DER Types by Zip Code for DER types on the Ameren Illinois system, including net metering (NM) and qualifying facilities (QF).

Below is a map of Illinois showing locations of DER connected to the Ameren Illinois' grid:



Service Quality Information

The following table summarizes the number of trouble calls received during the past five years that contain at least one of the trouble codes Flicker (FL) or Voltage Problem (VP). It is important to note many of these calls are associated with other conditions such as wires down, broken pole, etc.

Number of Calls	2017	2018	2019	2020	2021
	10,243	10,254	9,828	8,969	9,543

(d) identification of proceedings before the Commission that include information that will aid in analysis of the Utility's Electric Distribution System capital projects placed into service in the preceding nine (9) years with citations to where such information can be found in each proceeding so identified.

Links are provided to the general Formula Rate Update (FRU) documents location. Specific documents listed can be found under the appropriate Petition/Application section by description. Please note that in some instances page numbers may vary from what is listed, depending on the program used to access files and other individual viewing features.

Formula Rate Update: 21-0365 – Filed April 15, 2021

Ameren Exhibit 4.0 Direct Testimony of George T. Justice - pp. 7-30

Ameren Exhibits 4.1-4.5 – pp 2-6

A-C Schedules – pp 96- 99

Formula Rate Update: 20-0381 – filed April 14, 2020

Ameren Exhibit 4.0 - Direct Testimony of George T Justice – pp 7-33

Ameren Exhibits 4.1-4.5 – pp 2-4

A-C Schedules – pp 109-112

Formula Rate Update: 19-0436 – filed April 18, 2019

Ameren Exhibit 3.0 - Direct Testimony of George T. Justice – pp 7- 33

Ameren Exhibits 3.1 - 3.5 – pp 2-5

B Schedules – pp 86-89

Formula Rate Update: 18-0807 – Filed April 16, 2018

Ameren Exhibit 3.0 - Direct Testimony of George T Justice – pp 7-29

Ameren Exhibits 3.1, 3.2 – pp 1-5

B Schedules – pp 89-92

Formula Rate Update: 17-0197 - filed April 13, 2017

Exhibit 3.0 - Direct Testimony of Ronald D Pate – pp 7-37

Exhibits 3.1 & 3.2 – pp 1-6

B Schedules – pp 89-92

Formula Rate Update: 16-0262 - filed April 15, 2016

Exhibit. 3.0 - Direct Testimony of Ronald D. Pate – pp 7-34

Ameren Ex 3.1, 3.2 – pp 1-7

B Schedules – pp 85-88

Formula Rate Update: 15-0305 – filed April 24, 2015

Exhibit 3.0 - Direct Testimony of Ronald D. Pate – pp 9-39

Exhibits. 3.1 & 3.2 – pp 1-11

B Schedules – pp 85 – 88

Formula Rate Update: 14-0317 – filed April 17, 2014

Exhibit 4.0 - Direct Testimony of Ronald D Pate – pp 10-46

Exhibit 4.1, 4.2 – pp 1-20

B Schedules – pp 87 - 90

Formula Rate Update 13-0301 – filed April 19, 2013

Exhibit 3.0 - Direct Testimony of Ronald D Pate - pp 5-42

Exhibit 3.1 – pp 1-6

B Schedules (Part 1) – pp 86-89

Formula Rate Update 12-0293 – Filed April 20, 2012

Exhibit 4.0 – Direct Testimony of Ronald D Pate – pp 5-58

Exhibit 4.1 – pp. 1-18

B Schedules – pp 78-81

Formula Rate Update 12-0001 – filed January 3, 2012

Exhibit 6.0 - Direct Testimony of Ronald D Pate – pp 5-61

Exhibit 6.1 – pp 1-15

B Schedules – pp 82-85

ICC Assessment of AIC 2014 Reliability 16-0034 – page 51 of Staff's Attachment

ICC Assessment of AIC 2017 Reliability 19-0237 – page 54 of Staff's Attachment

Voltage Optimization Plan 18-0211

Ameren Ex. 1.0 – Direct Testimony of Mike Abba – pp 15-25

Ameren Ex. 1.1 – 17-25

(e) preliminary proposals on programs and policies applicable to each component of the Utility's Plan, as well as any information on which the Utility relied in developing those proposals, which proposals are designed to aid in or further any of the following undertakings and goals.[2]

Ameren Illinois states that Section 16-105.17(e) of the Public Utilities Act (the "Act") directs the Commission to initiate a workshop process no later than January 1, 2022, through which participants will receive and review information about Ameren Illinois' (i) historic distribution system investments for at least the five (5) years prior to the year in which the workshop is held, and (ii) planned investments for the five (5) year period following the year in which the workshop is held. *See* 220 ILCS 5/16-105.17(e)(1). The Act further clearly establishes the objectives of the workshops, specifically to:

(A) review utilities' planned capital investments and supporting data;
(B) review how utilities plan to invest in their distribution system in order to meet the system's projected needs;
(C) review system and locational data on reliability, resiliency, DER, and service quality provided by the utilities;
(D) solicit and consider input from diverse stakeholders, including representatives from environmental justice communities, geographically diverse communities, low-income representatives, consumer representatives, environmental representatives, organized labor representatives, third-party technology providers, and utilities;
(E) consider proposals from utilities and stakeholders on programs and policies necessary to achieve the objectives in subsection (d) of this Section;
(F) consider proposals applicable to each component of the utilities' Multi-Year Integrated Grid Plan filings under paragraph (2) of subsection (f) of this Section;
(G) educate and equip interested stakeholders so that they can effectively and efficiently provide feedback and input to the electric utility; and
(H) review planned capital investment to ensure that delivery services are provided at rates that are affordable to all customers, including low-income customers.

In order to allow the Commission to facilitate the workshop process, the Act authorizes the Commission to adopt emergency rules to carry out the provisions of Section 16-105.17. *See* 220 ILCS 5/16-105.17(i); *see also* 5 ILCS 100/5-45.9. On December 1, 2021, the Commission adopted Staff's proposed Part 475 emergency rules with an effective date of December 14, 2021.

[2] Given the nature of the emergency rules, Ameren Illinois reserves all of its rights and legal objections, including with respect to confidentiality, privilege, and the ability to supplement, clarify, revise, or correct any, or all, of the responses herein, when appropriate.

Ameren Illinois Response to 83 IL Admin Code Part 475.100

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for Multi-Year Integrated Grid Plan and Workshops

December 13, 2021

Section 475.100 of the Emergency Rules defines and describes specific information that Ameren Illinois is directed to provide to the Director of the Commission in advance of the workshop process described in Section 16-105.17(e) of the Act, which will convene no later than January 1, 2022.

Despite the scope of the workshops and the provisions of the Act that enable them, Section 475.100(e) of the Emergency Rules directs Ameren Illinois to provide, if available, "preliminary proposals on program and policies applicable to each component of" the Company's Multi-Year Integrated Grid Plan (which is to be submitted to the Commission by January 20, 2023, following the conclusion of the workshop process and subsequent comment period described in Section 16-105.27(e) of the Act). *See* 220 ILCS 5/16-105.17(f)(1). These preliminary proposals may include information "designed to aid in or further" any of the goals and objectives of the Multi-Year Integrated Grid Plan as described in Section 16-105.17(f)(1). *See* 475.100(e).

Accordingly, Ameren Illinois states that the Company has not yet developed any preliminary proposals on programs or policies, as Ameren Illinois understands those terms to mean in Section 475.100(e), that are designed to implement the detailed and extensive goals of Section 16-105.17(f)(1). Ameren Illinois reserves the right to supplement this response at an appropriate time, including after any such proposals or policies may be developed during the stakeholder process and subsequent comment period, as contemplated in the provisions of the Act set forth above. Ameren Illinois acknowledges the duty to further supplement any preliminary proposals on programs and policies applicable to each component of the Company's Multi-Year Integrated Grid Plan through the data request process established in Section 475.230 of the Emergency Rules, as applicable and to the extent appropriate. *See* 475.100(g).

(f) Public versions of data provided by the Utility to the auditor conducting the Baseline Grid Assessment pursuant to Section 16-105.10 of the Act. Information submitted prior to the workshops responsive to this Subpart (c) should be supplemented with public versions of any documents the Utility provides to the auditor during the pendency of the workshop process, at the same time the Utility provides those materials to the auditor.

Please refer to Attachment 3 – Summary of Information Provided in Response to Data Requests EB 1.01-1.12.